

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO. : 10/678,408
APPLICANT : Thomas J. Karol et al.
FILED : October 2, 2003
FOR : **SYNERGISTIC ORGANOBORATE COMPOSITIONS AND LUBRICATING COMPOSITIONS CONTAINING SAME**
ART UNIT : 1764
EXAMINER : Ellen M. McAvoy

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

I, Thomas J. Karol, hereby declare as follows:
I am a named inventor in the above-referenced application.
I am a US citizen residing at Holualoa, HI.
I submit this declaration in support of the above-referenced application.

I requested and oversaw the conducting of the experiments set forth in detail in the attached description, and have reviewed the results in detail. I verify that the results are true and accurate.

Examples 1-3 were prepared according to Example 1A of the present application. Vanlube® 289 is a commercial product available from R.T. Vanderbilt Company, Inc., and is identical to the product referenced in the application as OCD-289 Borated Diol. Vanlube 289 is formed as the reaction product boric acid with OCD 896, which is itself the reaction product of fatty oil and diethanolamine.

From examples 1 and 2, it is seen that the inventive compound Vanlube 289 has a relatively very low effectiveness on its own as an antiwear protector, but in combination with zinc dithiophosphate (ZDDP) (Example 3) provides a surprising synergy to give superior antiwear protection.

N, N'-bis(2-hydroxylethyl)-9-octadeceneamide was prepared according to the teaching of Canadian application no. 2014775. Examples 4 and 5 show that this amide has a very low effectiveness for antiwear. Furthermore, even when the compound of the prior art is combined with zinc dithiophosphate (Examples 6 and 7), it still has a relatively low effectiveness.

| Component | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|------|------|------|------|-------|------|-------|
| Naphenic Oil | 99 | 99.5 | 99 | 99 | 99.63 | 99 | 99.31 |
| Vanlube® 289 (formerly OCD-289) | 1.00 | 0.50 | 0.50 | --- | --- | --- | --- |
| N, N'-bis(2-hydroxylethyl)-9-octadeceneamide (2.3% B) | --- | --- | --- | 1.00 | 0.43 | 0.5 | 0.22 |
| Lubrizol®1395, primary ZDDP | --- | — | 0.50 | — | — | 0.50 | 0.50 |
| Boron Content, ppm | 100 | 50 | 50 | 230 | 99 | 115 | 50 |
| Pin & Vee block 500 lbs 60 minutes (mg loss) | 23 | Fail | 2.3 | 20.5 | 31.1 | 21.2 | 39.4 |

All statements made herein on knowledge are true, and all statements made on information and belief are believed to be true; and further these statements were made with the knowledge that willful false statement and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: March 18, 2009



Thomas J. Karol